AMENDMENT TO THE CLAIMS

1.(Currently Amended) A method of speaker recognition that generates a likelihood that the same speaker generated a training signal and a test signal, the method comprising:

generating a matched test signal and a matched training signal by performing steps for each of a plurality of frequency components, the steps comprising:

adding to the strength of the frequency component in one of the test signal or training signal ~~as part of the production of the matched test signal and matched training signal~~ so that the mean strength of the frequency component of noise in the matched test signal matches the mean strength of the frequency component of noise in the matched training signal;

determining the variance of the frequency component of noise in the training signal;

determining the variance of the frequency component of noise in the test signal; and

increasing the variance of the frequency component in one of the test signal or the training signal so that the variance of the frequency component in the noise of the matched training signal matches the variance of the frequency component in the noise of the matched test signal;

creating a model based on the matched training signal; and

applying the matched test signal to the model to produce the likelihood that a same speaker generated the training signal and the test signal.

2. The method of claim 1 wherein performing steps for each of a plurality of frequency components, further comprises the steps of:

determining the mean strength of the frequency component of noise in the training signal;

determining the mean strength of the frequency component of noise in the test signal, and

subtracting the mean strength of noise in the training signal from the mean strength of noise in the test signal to determine a value to add during the step of adding to the strength of the frequency component in one of the test signal or training signal.

3. The method of claim 1 wherein for each frequency component the step of adding to the strength of the frequency component in one of the test signal or training signal comprises adding to the strength of the frequency component in the test signal.

4. The method of claim 1 wherein for each frequency component the step of adding to the strength of the frequency component in one of the test signal or training signal comprises adding to the strength of the frequency component in the training signal.

5. The method of claim 1 wherein for some frequency components the step of adding to the strength of the frequency component in one of the test signal or training signal comprises adding to the strength of the frequency component in the training signal and for other frequency components the step of adding to the strength of the frequency component in one of the test signal

or training signal comprises adding to the strength of the frequency component in the test signal.

6. The method of claim 1 wherein adding to the strength of the frequency component in one of the test signal or training signal does not change the variances of the frequency component in the test signal and the training signal.

7. (Canceled)

8. (Currently Amended) The method of claim ~~7~~ 1 wherein increasing the variance of the frequency component in one of the test signal or the training signal comprises:

deriving a variance pattern from a noise segment taken from one of the test signal or training signal; and

adding the variance pattern to all segments of one of the test signal or the training signal.

9. The method of claim 8 wherein deriving the variance pattern of the noise segment comprises:

determining the mean of the noise segment;

subtracting the mean of the noise segment from the noise segment to produce a zero-mean noise segment; and

multiplying the zero-mean noise segment by a gain factor to produce the variance pattern.

10. The method of claim 9 wherein adding the variance pattern to all segments of one of the test signal or training signal further comprises:

after adding the variance pattern determining the most negative value for the frequency component in one of the test signal or the training signal; and

adding a value equal to the magnitude of the most negative value to the frequency component of both the test signal and the training signal.

11. The method of claim 9 wherein adding the variance pattern to all segments of one of the test signal or training signal further comprises:

after adding the variance pattern and adding to the strength of the frequency component in one of the test signal or training signal, determining the most negative value for the frequency component in one of the test signal or the training signal; and

adding a value equal to the magnitude of the most negative value to the frequency component of both the test signal and the training signal.

12. The method of claim 8 wherein adding to the strength of the frequency component in one of the test signal or training signal comprises adding to the strength of the variance pattern before adding the variance pattern to all segments of one of the test signal or training signal.

13. The method of claim 8 wherein deriving a variance pattern comprises deriving a variance pattern from a noise segment taken from the test signal and wherein adding the variance pattern comprises adding the variance pattern to all segments of the training signal.

14. The method of claim 8 wherein deriving a variance pattern comprises deriving a variance pattern from a noise

segment taken from the training signal and wherein adding the variance pattern comprises adding the variance pattern to all segments of the test signal.

15. (Currently Amended) A method of identifying a speaker comprising:

receiving a training speech signal;

receiving a test speech signal;

for each of a plurality of frequency components adding to the variance of the frequency component in one of the training speech signal or test speech signal so that the variance of the frequency component of noise ~~is matched~~ in a matched training speech signal matches the variance of the frequency component of noise in ~~and~~ a matched test speech signal, wherein adding to the variance of the frequency component comprises:

identifying a series of strength values for the frequency component in a segment of noise taken from one of the training speech signal or the test speech signal;

finding the mean of the series of strength values;

subtracting the mean from each strength value in the series of strength values to generate zero-mean strength values;

multiplying the zero-mean strength values by a gain factor to produce a variance pattern; and

adding the variance pattern to each segment of one of the training speech signal or the test speech signal;

generating a model from the matched training speech signal; and

comparing the matched test speech signal to the model to identify the speaker.

16. (Canceled)

17. (Currently Amended) The method of claim 15~~16~~ wherein after adding the variance pattern the method further comprises:

determining the most negative value for the strength of the frequency component in the one of the training speech signal or test speech signal to which the variance pattern was added; and

adding the absolute value of the most negative value to the strength of the frequency component over the entire training speech signal and the entire test speech signal.

18. (Currently Amended) The method of claim 15 further comprising for each of a plurality of frequency components adding to the frequency component of one of the test speech signal or the training speech signal so that the mean strength of the frequency component of the noise in the test speech signal is matched to the mean strength of the frequency component of the noise in the training speech signal.

19. (Currently Amendment) The method of claim 15~~16~~ further comprising before adding the variance pattern to each segment of one of the training speech signal or test speech signal:

adding a same value to each strength value of the variance pattern so that the mean strength of the frequency component of the noise in the matched test speech signal is matched to the mean strength of the frequency component of the noise in the matched training speech signal when the variance

pattern is added to each segment of one of the training speech signal or the test speech signal.

20. (Canceled)

21. (Currently Amended) A computer-readable medium having computer-executable instructions for performing speaker recognition, the instructions performing steps comprising:

receiving a training speech signal;

receiving a test speech signal;

adding to the strength of at least one frequency component across the entirety of one of the training speech signal or test speech signal in the production of a matched training speech signal and a matched test speech signal such that the mean strength of the frequency component in noise in the matched training speech signal is the same as the mean strength of the frequency component in noise in the matched test speech signal;

selectively adding to the strength of the frequency component in one of the training speech signal or the test speech signal in further production of the matched training speech signal and the matched test speech signal such that the variance of the strength of the frequency component of noise in the matched training speech signal is equal to the variance of the strength of the frequency component of noise in the matched test speech signal;

generating a model from the matched training speech signal; and

comparing the matched test speech signal to the model to identify a speaker.

22. The computer-readable medium of claim 21 wherein adding to the strength of a frequency component comprises:

determining the mean strength of the frequency component in noise in the training speech signal;

determining the mean strength of the frequency component in noise in the test speech signal;

determining the difference between the mean strength in noise in the training speech signal and the mean strength in noise in the test speech signal;

adding the difference to the strength of the frequency component in one of the training speech signal or test speech signal.

23. (Canceled)

24. (Currently Amended) The computer-readable medium of claim 21~~23~~ wherein selectively adding to the strength of the frequency component comprises:

selecting a noise segment from one of the training speech signal or the test speech signal;

identifying strength values of the frequency component in the noise segment;

determining the mean of the strength values;

subtracting the mean of the strength values from the strength values to produce a sequence of mean adjusted strength values;

multiplying the mean adjusted strength values by a gain factor to produce gain adjusted strength values;

adding the gain adjusted strength values to respective strength values of the frequency component in each of a plurality of segments that together

constitute one of the training speech signal or test speech signal.

25. The computer-readable medium of claim 24 wherein adding to the strength of at least one frequency component across the entirety of one of the training speech signal or test speech signal comprises adding the same value to all of the gain adjusted strength values before adding the gain adjusted strength values to the respective strength values.

26. The computer-readable medium of claim 25 wherein selectively adding to the strength of the frequency component further comprises:

identifying the most negative value produced by adding the gain adjusted strength values to the respective strength values of the frequency component in each of a plurality of segments that constitute one of the training speech signal and test speech signal; and

adding a value equal to the absolute magnitude of the most negative value to each strength value of the frequency component in both the training speech signal and the test speech signal.

27. (Currently Amended) The computer-readable medium of claim 24 wherein the computer-executable instructions perform further steps comprising:

determining the variance of strength values of the frequency component in the noise of the test speech signal;

determining the variance of strength values of the frequency component in the noise of the training speech signal;

determining the variance of the strength values of the frequency component in the noise segment; and

determining the gain factor by subtracting the variance of the strength values of the frequency component in the noise of the test speech signal from the variance of the strength values of the frequency component in the noise of the training speech signal and dividing the difference by the variance of the strength values of the frequency component in the noise segment.

28. The computer-readable medium of claim 24 wherein selectively adding to the strength of the frequency component further comprises:

identifying the most negative value produced by adding the gain adjusted strength values to the respective strength values of the frequency component in each of a plurality of segments that constitute one of the training speech signal and test speech signal; and

adding a value equal to the absolute magnitude of the most negative value to each strength value of the frequency component in both the training speech signal and the test speech signal.

29. (Canceled)

30. (New) A method of speaker recognition that generates a likelihood that the same speaker generated a training signal and a test signal, the method comprising:

generating a matched test signal and a matched training signal by performing a step for each of a plurality of frequency components, the step

comprising adding to the strength of the frequency component in one of the test signal or training signal so that the mean strength of the frequency component of noise in the matched test signal matches the mean strength of the frequency component of noise in the matched training signal, wherein for some frequency components the step of adding to the strength of the frequency component in one of the test signal or training signal comprises adding to the strength of the frequency component in the training signal and for other frequency components the step of adding to the strength of the frequency component in one of the test signal or training signal comprises adding to the strength of the frequency component in the test signal;

creating a model based on the matched training signal; and

applying the matched test signal to the model to produce the likelihood that a same speaker generated the training signal and the test signal.

31. (New) A method of identifying a speaker comprising:

receiving a training speech signal;

receiving a test speech signal;

for each of a plurality of frequency components adding to the variance of the frequency component in one of the training speech signal or test speech signal so that the variance of the frequency component of noise in a matched training speech signal matches the variance of the frequency component of noise in a matched test speech signal;

for each of a plurality of frequency components adding to the frequency component of one of the test speech signal or the training speech signal so that the mean strength of the frequency component of the noise in the matched test speech signal matches the mean strength of the frequency component of the noise in the matched training speech signal;

generating a model from the matched training speech signal; and

comparing the matched test speech signal to the model to identify the speaker.

32. (New) A method of identifying a speaker comprising:

receiving a training speech signal;

receiving a test speech signal;

receiving a second training speech signal;

for each of a plurality of frequency components adding to the variance of the frequency component in one of the training speech signal or test speech signal so that the variance of the frequency component of noise in a matched training speech signal matches the variance of the frequency component of noise in a matched test speech signal, wherein adding to the variance of a frequency component in one of the training speech signal or test speech signal comprises:

identifying the largest variance of the frequency component in the noise of the test speech signal, the noise of the training speech signal and the noise of the second training speech signal; and

adding to the variance of the frequency component in one of the training speech signal or test speech signal so that the variance of the frequency component in the noise of the matched test speech signal matches the variance of the frequency component in the noise of the matched training speech signal;

generating a model from the matched training speech signal; and

comparing the matched test speech signal to the model to identify the speaker.